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ABSTRACT

This study examined the need to develop reliable and valid procedures for screening large populations for possible speech and language problems and the use of the Fluharty Preschool Speech and Language Screening Test (FPSLST) as such a device. The test was administered to 260 preschool children, ages three to six. There were 166 Blacks and 94 Whites in the sample with a mean age of 4.1 years. Subjects came from two rural counties in the southern United States. Results indicated that age was positively related at a moderate level to the total subtest scores and that the overall strength of the race variable as expressed by phi values was relatively low. Analyses of step-wise discrimination and item difficulty raised questions concerning the usefulness and appropriateness of many test items. The deletion of items on the language-related subtests did not appear to save enough testing time to warrant their removal and resulting mis-classification of subjects. Multiple-regression procedures performed on the three language subtests revealed that the power of any single subtest to predict other subtests, or combination of two subtests to predict scores on a third subtest, accounted for such small degrees of variance that the continued use of all three subtests was deemed necessary. As for the internal consistency reliability of the three language subtests, only the Repetition subtest showed acceptable item homogeneity. (PN)

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THE FLUHARTY PRESCHOOL SPEECH AND LANGUAGE SCREENING TEST: A LOOK AT TEST CONSTRUCTION

A Poster Session Presented at the 1985 National ASHA Convention

By

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Statement of the Problem:

The need to develop reliable and valid procedures for screening large populations for possible speech and language problems has long been accepted by the speech-language pathologists. Unfortunately most of the current procedures have not been subjected to rigorous statistical analysis. Such analysis would allow the prospective user to select the most appropriate screening device for his/her personal needs. It was the purpose of the present study to examine one of the more commonly used screening devices, the **Fluharty Preschool Speech and Language Screening Test** (FPSLST).

Research Questions:

Specifically, this study was designed to determine:

1) if there was a correlation between subtest scores and age of the subject
2) if any particular test items tended to be racially biased
3) if any items could be omitted without interfering with the test's ability to classify a subject into pass/fail groups
4) if all three language subtests were needed
5) the internal consistency reliability of the language related subtests

Method:

The FPSLST was administered to a sample population of 260 preschool children, ages 3 years to 6 years. There were 166 Blacks and 94 Whites in the sample with a mean age of 4.1 years. All subjects came from two rural counties in the southern United States.

Summary of Results:

Statistical analysis indicated that age was positively related at a moderate level to the total subtest scores. Results also indicated that although there were individual items in the various subtests failed by Blacks at a higher than expected rate, the overall strength of the race variable as expressed by phi values was relatively low. Additionally, when total subtest responses were considered, no subtest was found to be failed at a higher than expected rate.

Results of a step-wise discriminate analysis and item difficulty analysis raised questions concerning the usefulness and appropriateness of many test items. It was found that more than one half of the phonemes tested in the Articulation subtest could be deleted and still correctly classify almost 90% of the children. However, the deletion of items on the langunge related subtests did not appear to save enough testing time to warrant their removal and resulting mis-classification of subjects.

Multiple-regression procedures performed on the three language subtests revealed that the power of any single subtest to predict the other subtests or the combination of two subtests to predict scores on a third subtest accounted for such small degrees of variance that the continued use of all three subtests was deemed necessary. As for the internal consistency reliability of the three language subtests, only the Repetition subtest showed acceptable item homogeneity.

Table 1: Identification items on which Blacks errored significantly more than Whites

	% of Subjects in error					
Item	Whites	Blacks	Total Sample	χ^2	p	ϕ
Window	17.00	44.60	34.60	20.14	.001	.278
Leaves	25.50	48.80	40.40	13.49	.001	.228
Feather	26.60	60.80	48.50	28.18	.001	.327

N = 260
d.f. = 1

Table 2: Phonemes on which Blacks errored significantly more than Whites

	% of Subjects in error					
Phoneme	Whites	Blacks	Total Sample	χ^2	p	ϕ
t	42.60	56.60	51.50	4.76	.05	.134
g	28.70	54.80	45.40	16.49	.001	.254
k	25.50	53.60	43.50	19.29	.001	.272
f	23.40	51.80	41.50	19.94	.001	.277
θ	19.10	31.90	27.30	4.94	.05	.138
d	13.80	30.10	27.20	8.68	.01	.182
ʒ	6.40	15.70	12.30	4.79	.05	.134
z	33.00	67.50	55.00	28.85	.001	.333
s	26.60	44.00	37.70	7.72	.01	.173

N = 260
d.f. = 1

Table 3: Phonemes on which Blacks omitted significantly more than Whites

	% of Subjects Omitting Phoneme					
Phoneme	Whites	Blacks	Total Sample	χ^2	p	ϕ
t	42.60	56.60	51.50	4.76	.05	.134
g	24.50	53.60	43.10	20.79	.001	.283
k	23.40	50.00	40.40	17.63	.001	.263
f	19.10	45.20	35.80	17.70	.001	.261
0	8.50	21.70	16.90	7.41	.01	.170
d	12.80	29.50	23.50	9.38	.01	.199
z	19.10	39.80	32.30	11.66	.001	.212
v	29.80	42.80	38.10	4.29	.05	.130
s	13.80	29.50	23.80	8.13	.01	.176

N = 260
d.f. = 1

Table 4: Comprehension items on which Blacks errored significantly more than Whites

	% of Subjects in error					
Item	Whites	Blacks	Total Sample	χ	p	ϕ
You are opening your mouth	3.2	10.20	7.70	3.20	.05	.126
The pencil is yellow	22.30	41.00	34.20	9.26	.01	.190
_____is coughing	34.00	49.40	43.80	5.75	.05	.148
Where is the feather?	18.10	29.50	25.40	4.14	.05	.126

N = 260
d.f. = 1

Table 5: Repetition items on which Blacks errored significantly more than Whites

Item	% of Subjects in error: Whites	Blacks	Total Sample	X^2	p	ϕ
The girls have the presents	35.10	53.60	46.90	8.25	.01	.179
That is her cat	12.80	32.50	25.40	12.38	.001	.219
The girl said, "Who is it?"	45.70	59.60	54.60	4.67	.05	.134
The boy said "Blow hard."	35.10	51.20	45.40	6.27	.01	.155

N = 260
d.f. = 1

Table 6: Results of multiple regression using language subtests.

Subtest Predicting	Subtest(s) Predictor(s)	R^2	F	p
Vocabulary	Comprehension	.281	100.66	.001
Vocabulary	Repetition and Comprehension	.326	62.19	.001
Repetition	Comprehension	.176	55.00	.001
Repetition	Vocabulary and Comprehension	.228	37.92	.001

N = 260
d.g. = 1

Table 7: Simple correlation of language subtests.

	Comprehension	Repetition
Vocabulary	.530	.416
Comprehension	.419	.420

Table 8: Difficulty levels of Identification Test Items.

Item	Difficulty Level (% Subjects Passing)
feather	51.5%
leaves	59.6%
window	65.4%
bag	71.5%
jelly	73.1%
hat	86.5%
ring	87.3%
yes	94.6%*
pencil	95.8%*
knife	96.9%*
shoes	97.3%*
comb	98.8%*
chair	99.2%*
sock	94.6%*
teeth	97.3%*

*Outside acceptable range of difficulty

Table 9: Difficulty levels of Articulation Test Items

First Phoneme	Difficulty Level	Second Phoneme	Difficulty Level
h	99.6%*	[illegible]	48.5%
b	98.8%*	g	54.6%
s	85.4%	k	56.5%
n	96.5%*	f	58.5%
t	97.7%*	θ	76.9%
p	98.5%*	n	92.3%
w	96.9%*	d	75.8%
k	95.4%*	m	81.5%
r	56.2%	ŋ	88.5%
ʃ	85.4%	z	45.0%
l	86.2%	v	47.7%
tʃ	83.5%	r	41.5%
f	91.9%*	ʒ	72.7%
dʒ	87.7%	I	82.3%
j	95.8%*	s	62.3%

*Outside acceptable range of difficulty

Table 10: Difficulty levels of Comprehension Test Items.

Item	Difficulty Level
The comb isn't on the table	33.8%*
(Child's name) is coughing	56.2%
Take the shoe and hat	65.8%
The pencil is yellow	65.0%
The bag is paper	67.3%
The ring is on the bag	68.5%
Where is the feather	74.6%
Show me your sock	87.3%
You are opening your mouth	92.3%*
Is the leaf on the table?	92.7%*

*Outside acceptable range of difficulty

Table 11: Difficulty levels for Repetition Test Items.

Item	Difficulty Level
The girl said, "Who is it?"	45.4%
The girls have the presents.	53.1%
The boy said "Blow hard."	54.6%
The man is a football player.	63.5%
The baby is little.	73.1%
The ice cream fell.	73.5%
That is her cat.	74.6%
The bus is here.	76.9%
The man can't reach.	78.1%
They are walking.	82.3%

Correlations of Total Subtest Score to Age

Subtest	r	p
Identification	.42	.001
Articulation	.33	.001
Comprehension	.43	.001
Repetition	.26	.001

d.f. = 258